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TOSHIBA AMERICA INFORMATION SYSTEMS
STORAGE DEVICE DIVISION
IRVINE, CALIFORNIA

MK4004GAH (HDD1524)
1.8-INCH HARD DISK DRIVE
USER MANUAL

Rev 02

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INTRODUCTION – MK4004GAH (HDD1524) HARD DISK DRIVE

General Features

- 1.8" sized drive
- 2 Platter
- 40 Gigabytes*
- 8mm High
- 15ms Average Seek Time
- ATA (2 - 5) Interface
- Ultra DMA 100
- 512KB Buffer
- Rotational speed of 4,200rpm
- MTTF 300,000 Hours

**Toshiba defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes.*

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SETUP – MK4004GAH (HDD1524) HARD DISK DRIVE

***Caution**: Your Hard Disk Drive is a precision device and even a small drop onto any surface can cause damage. Electronstatic discharge can also damage the drive. You should ground yourself prior to handling the drive.*

Figure 1. MK4004GAH Side View

Installation Notes

- Do not apply any force to the top cover, except the screw areas on top cover. Maximum force to the specified area is 2N.

important Note: Disconnect power from your computer system before beginning installation

USING THE HARD DISK DRIVE – MK4004GAH (HDD1524) HARD DISK DRIVE

Backing up Data Files

To avoid data loss, regularly back up the data files on the hard disk drive.

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SPECIFICATIONS –MK4004GAH (HDD1524) HARD DISK DRIVE

General

Model	MK4004GAH (HDD1524)
Interface	ATA-2/3/4/5

Functionality

Formatted Capacity	40.0GB*
Rotational Speed	4,200rpm
Avg. Rotational Latency	7.14/ms
Spin-up Time	3.5sec (typical)
Buffer	512KB
Seek Time	
Average	15
Maximum	26
Internal Transfer Rate	125.5 ~ 253.1 Mbits/sec (max)
Host Transfer Rate	
Ultra DMA mode	100Mbytes/sec
PIO Mode	16.6Mbytes/sec
Interleave Factor	1:1

**Toshiba defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes.*

Internal Drive Characteristics

Number of Disks	2
Number of Data Heads	4
Track Density (TPI)	3,465 (88.0k)
Logical Cylinders	16,383
Logical Heads	16
Logical Sectors/track	63
Bytes per Sector	512
Logical Blocks (LBA)	78,126,048

Reliability

Preventative maintenance	None
Non-recoverable read errors	1 error per 10^{13} bits read

Electrical

Voltage	3.3V 5%

Power Consumption

Start	1.3W typ
Seek	1.4W typ
Read/Write	1.4W typ
Sleep	0.08W typ
Energy Consumption Efficiency	0.01W/GB avg
Shock	
Operating	2,450m/s^2 (250G)(2msec)
Non-Operating	9,800m/s^2 (1000G)(1msec)

Physical

Height	0.315 (8.0mm)
Width	2.13" (54.0mm)
Depth	3.09" (78.5mm)
Weight	2.19oz (62g) typ

Regulatory

The drive satisfies the following standards:

Underwriters Laboratories (UL)	1950
Canadian Standard Association (CSA)	C22.2 No. 950
TUV Rheinland	EN 60 950
BSMI	3902C799

DRIVE CONNECTORS –MK4004GAH (HDD1524) HARD DISK DRIVE

Figure 1. MK4004GAH HDD - INTERFACE CONNECTOR

Interface Connector

Drive Side Connector	MCD-D50 Series by DDK Connectors
Recommended Host Side Connector	MCD-D50 Series by DDK Connectors

Interface Signals

DRIVE INTERFACE SIGNALS			
PIN	**SIGNAL**	**PIN**	**SIGNAL**
1	RESET	2	GROUND
3	DD 7	4	DD 8
5	DD 6	6	DD 9
7	DD 5	8	DD 10
9	DD 4	10	DD 11
11	DD 3	12	DD 12
13	DD 2	14	DD 13
15	DD 1	16	DD 14
17	DD 0	18	DD 15
19	GROUND	20	OPEN
21	DMARQ	22	GROUND
23	DIOW/STOP	24	GROUND
25	DIOR/ -DMARDY HSTROBE	26	GROUND
27	IORDY/ -DMARDY/- DSTROBE	28	CSEL
29	DMACK	30	GROUND
31	INTRQ	32	IOCS16
33	DA1	34	PDIAG
35	DA0	36	DA 2
37	CS0	38	CS1
39	DASP	40	GROUND
41	3.3V (LOGIC)	42	3.3V (MOTOR)
43	GROUND	44	RESERVED
Note: Symbol () in front of signal indicates negative logic.			